

Appendix B

NIST Examination Procedure Outline No. 24

Vehicle-Tank Meters Gravity-Discharge

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Examination Procedure Outline for

Vehicle-Tank Meters Gravity-Discharge

It is recommended that this outline be followed for all gravity-discharge vehicle-tank meters – analog or digital. Nonretroactive requirements are followed by the applicable date in parentheses. Do not use this outline for testing milk metering systems, or power-operated vehicle tank meters.

SAFETY NOTES

When excerpting this Examination Procedure Outline for duplication, the "Safety Considerations" section and the "Glossary of Safety Key Phrases" should be duplicated and included with the outline.

The inspector is reminded of the importance of evaluating potential safety hazards prior to an inspection and taking adequate precautions to avoid personal injury or damage to the device. The inspector should read and be familiar with the introductory section on safety found at the beginning of this publication. As a minimum, the following safety precautions should be noted and followed during the inspection. Definitions of each reminder are found in the "Glossary of Safety Key Phrases" at the back of this publication.

Many policies and regulations will vary from jurisdiction to jurisdiction. It is essential that the inspector or serviceperson be aware of all safety regulations and policies in place at the inspection site and to practice the safety policies established by the inspector's or serviceperson's employer. The safety reminders included in this EPO contain general guidelines for safety. These guidelines are useful in alerting inspectors and servicepersons to the importance of taking adequate precautions to avoid personal injuries. These guidelines can only be effective in mitigating safety hazards if inspectors and servicepersons receive training in hazard recognition and controls.

Clothing

Material Safety Data Sheets (MSDS)

Electrical Hazards

Nature of Product

Emergency Procedures

Personal Protection Equipment

Eye Protection

e.g. Safety Shoes, Safety Aprons, Gloves,
Hard Hat, etc. if deemed necessary

Fire Extinguisher

Safety Cones/Warning Signs

First Aid Kit

Static Discharge

Grounding

Switch Loading

Ignition Sources

Traffic

Lifting

Transportation of Equipment

Location

also: **Wet/Slick Conditions, Chemicals, Hazardous Materials,
Petroleum Products, Obstructions**

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Inspection:

Safety First !!!

Check the inspection site carefully for safety hazards and take appropriate precautions

Check to be certain that the ground surface of the inspection site is sufficiently strong and rigid to support the Prover when it is filled with product – don't forget to chock the wheels of the prover

Learn the nature of hazardous products used at or near the inspection site – obtain and read Copies of MSDS's

Know emergency procedures and location and operation of fire extinguisher and emergency shut-offs

Post safety cones/warning signs and be aware of vehicular and pedestrian traffic patterns

Use caution in moving in wet, slippery areas and climbing on prover, storage tanks, and vehicles

Use personal protection equipment and clothing appropriate for the inspection site

If leaks, spills, or exposed wiring cause hazardous testing conditions it is recommended that the testing be discontinued until the unsafe conditions are corrected

Be sure that a first aid kit is available and that it is appropriate for the type of inspection activity

H-44 General Code and Vehicle-Tank Meters Code References

1. General considerations.
 - Selection..... G-S.3., G-UR.1.1., G-UR.1.2., G-UR.1.3.
 - Installation..... G-S.2., G-UR.2.1., G-UR.2.2., UR.1.1.
 - Position of Equipment G-UR.3.3.
 - Accessibility..... G-UR.2.3.
 - Assistance..... G-UR.4.4., G-UR.4.6.
 - Use and maintenance G-UR.3.1., G-UR.4.1., G-UR.4.2., UR.2.3.
2. Marking..... G-S.1., G-UR.2.1.1., S.5.1, S.5.2.
3. Indicating and recording elements.
 - Design S.1.1.1.
 - Units S.1.1.2.(a) , S.1.1.3.(b) and (c)
 - Readability G-S.5., G-S.6. (1/1/77), G-S.7., S.1.2., S.1.3.
 - Values of intervals G-S.5.3.
 - Computing-type devices
 - Display of unit price S.1.4.1, UR.1.2.
 - Printed ticket S.1.4.2., UR.2.2.
 - Exceptions for the Sale of Aviation Fuel UR.2.2.1.
 - Money-value computations S.1.4.3.
 - Advancement and return to zero..... S.1.1.4., S.1.1.5., UR.2.1.

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Inspection (Cont.):

3. Indicating and recording elements (cont.).
Provision for sealing G-S.8. (1/1/90), G-UR.4.5.
4. Measuring elements.
Vapor Elimination..... S.2.1.
Security seal on adjusting mechanism..... G-UR.4.5., S.2.2.
5. Piping.
Directional flow valves and discharge line and valves S.2.3., S.3.
Leaks G-UR.4.1.
Facilitation of fraud..... G-S.2.

Pretest Determinations:

1. Determine that the test fluid in the tank compartment is
Similar in character to the fluid to be measures N.1.
2. Determine that a compartment or compartments have a sufficient
amount of product to conduct “high head” and “low head” tests.
3. Test Drafts: determine if the prover size is adequate and
that the prover inlet is lower than the meter outlet N.3.
4. Tolerances.
Applicable requirements..... G-T., T.1.
Tolerance values T.2.
Agri-chemicals..... T.3.
Repeatability T.4.
4. Note totalizer reading

Test Notes:

Wear appropriate personal protection equipment such as petroleum-resistant, nonskid safety shoes (to prevent possible injury from spills or slipping on slick surfaces), protective clothing, eye protection (to prevent injury from splashed product), and a hard hat (to prevent injury from overhangs and projections)

Use proper grounding procedures

Be sure that prover is equipped with an explosion proof motor

Carefully inspect electrical supply lines to test equipment for wear and damage; correct potentially hazardous conditions before use

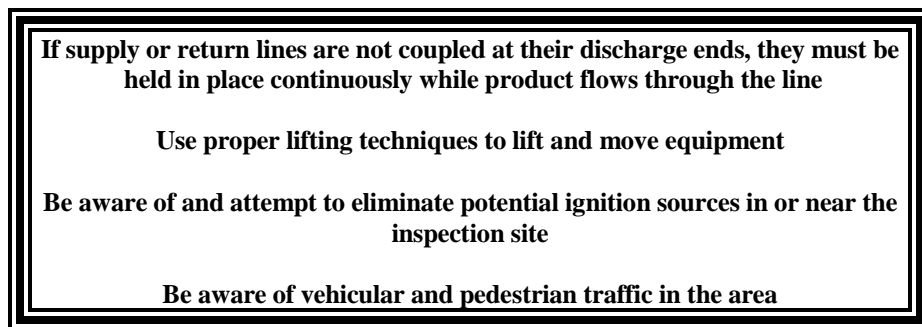
Device operator should be present at all times during test – the operator (not the inspector) should operate the device under test. Do not leave equipment unattended while in operation

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Test Notes (cont.):

1. Wet prover. Allow a 30-second drain period each
Time prover is emptied.
2. Evaporation and Volume Change: exercise care so that the product temperature
is the same in the prover as at the meter..... N.2.
3. Record totalizer (s) indication before and after each draft to determine proper operation
4. After each test draft:
 - a. Print a ticket (if so equipped)..... G-S.5.6.
 - b. If computing type, check price computation on
indicator and on recorded representations..... G.S.5.6., S.1.4.2., S.1.4.3., S.1.4.4.
 - c. Check for agreement between indicators G-S.5.2.2.

Test:



1. Normal test--full flow (high head, full
compartment), basic tolerance..... N.4.1., T.2.
2. Normal test – full flow (medium head,
one-half full compartment), basic tolerance..... N.4.1., T.2.
3. Normal test – full flow (low head, one and one-half
times prover capacity in compartment), basic tolerance..... N.4.1., T.2.
4. Special test – split compartment, special tolerance..... S.2.1., N.4.2. (b) , T.2.
 - a. Start test (normal flow rate) from a compartment
containing less test load than one-half prover capacity.
 - b. Permit test to continue until lack of fluid supply
causes meter register to stop absolutely.
 - c. Shut manifold valve (or disconnect whip-hose connection)
from now empty compartment
 - d. Open valve from compartment with adequate supply of fluid to complete test.
5. RFI/EMI test (electronic equipment only) G-N.2., G-UR.1.2., G-UR.3.2., G-UR.4.2.
Radio frequency interference (RFI)
Electromagnetic interference (EMI)

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Test (cont.):

6. Check automatic stop mechanism G-UR.4.1.
The device should stop the flow within
one-half the minimum interval indicated
7. Security seal G-UR.4.5.

Record on the official report the number of gallons of product dispensed during test.

Avoid switch loading!
Test devices dispensing low-vapor pressure products (e.g., diesel fuel, kerosene)
Before testing devices dispensing high-vapor pressure products (e.g., gasoline)

After all equipment at a location has been tested,
review results to determine compliance with equipment
maintenance and use of adjustments G-UR.4.1., G-UR.4.3.

Take precautions to isolate equipment when
Transporting it to avoid exposure to hazardous fumes